

Hydrogen Sulfide Micro-Sensor for Biomass Fouling Detection, Phase I

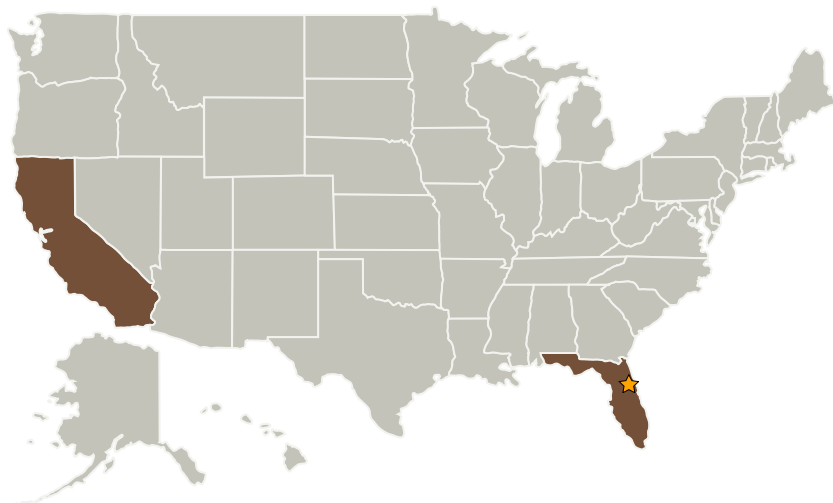
Completed Technology Project (2005 - 2005)



Project Introduction

Hydrogen Sulfide (H₂S) is the leading chemical agent causing human fatalities following inhalation exposures. The overall aim of this project is to develop and produce an inexpensive, highly selective and sensitive solid-state chemical micro-sensor with low power consumption that is suitable for rapid detection of very low-level (ppb) concentration of H₂S in ambient air. The technology principle used to develop the micro-sensor is based on the knowledge that H₂S is adsorbed into gold at an operating temperature range. By using a gold thin-film, and MEMS technology, we will produce a micro-sensor with the following specifications 1 mm x 1 mm micro-sensor, 3 seconds response and recovery time, 10 mW power consumption, and detection in the ppb range. Phase I will investigate the feasibility of the design, fabrication, testing, and validation of the micro-sensor in collaboration with researchers from the Integrated Nanosystems Research Facility at the University of California Irvine. During Phase II, the innovative solid-state micro-sensor will be integrated in a miniaturized battery powered wireless instrument for applications in biomass fouling detection.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Kennedy Space Center (KSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
Kebaili Inc.	Supporting Organization	Industry	Laguna Beach, California

Primary U.S. Work Locations	
California	Florida

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Mo Kebaili

Technology Areas

Primary:

- TX14 Thermal Management Systems
 - └ TX14.1 Cryogenic Systems
 - └ TX14.1.3 Thermal Conditioning for Sensors, Instruments, and High Efficiency Electric Motors